Oil & Gas Pricing And Trade Competition: An Ontario View

Ontario

Ministry of Treasury
Economics and
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Affairs

OIL & GAS PRICING AND TRADE COMPETITION: AN ONTARIO VIEW

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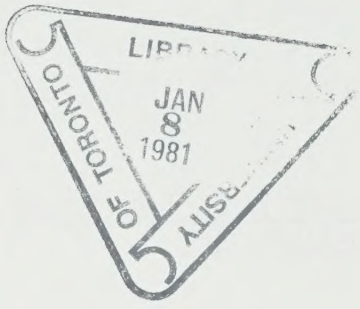
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INTRODUCTION AND HIGHLIGHTS

Introduction

The Canadian economy has entered the recovery phase. To a large degree, the strength of this recovery will depend on Canada's competitive trading position. At the same time, the economy is faced with the possibility of yet another round of across-the-board oil and natural gas price increases. This action could have a significant impact on the competitive strength of the economy and the degree of recovery.

Recently, the Ontario Government called attention to the productivity gap which is emerging in our economy and stressed the need to develop both short and long run national policies to sustain future economic strength.[1] A comprehensive energy pricing strategy is a vital component of such a new economic policy. Accordingly, the Government has also recommended the adoption of a unified set of energy objectives and a new pricing strategy.[2] The objectives are geared to:

1. expanding security of supply;
2. maintaining and enhancing Canada's competitive position;
3. minimizing price impact on consumers;
4. maintaining a credible relationship between selling prices and production costs;
5. ensuring that the indexing factor for natural gas not be increased over the current 85 per cent at this time; and
6. recognizing the needs of oil producing provinces.

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1. Honourable W. Darcy McKeough, Ontario Budget 1976.
2. Ontario Ministry of Energy, "Ontario's Proposal for an Alternative Method of Pricing Domestic Crude Oil," March 1976.

In line with these objectives, Ontario has advocated the adoption of a pricing policy for crude oil which would provide a rational and workable mechanism for reconciling the needs of producers and consumers while encouraging the development of long run energy supplies.

This paper deals with the second objective. It presents an economic analysis of the impact of oil and gas price increases on the competitiveness of Ontario industry. Its major conclusion is that significant increases would further damage the competitive position of Ontario industry and, to a large degree, this would not be offset by other factors.

Highlights

In reviewing the analysis the following basic points should be kept in mind:

- Direct and Indirect Effects: Oil and gas price increases effect industry directly in terms of fuel and feedstock costs and indirectly through price increases of other commodities. Also, energy price increases can have an upward leverage effect on wages.

- Transportation Costs: A major role in the ultimate competitiveness of goods is played by transportation costs.

- Competitive Edge: The outcome of price competition is determined by prices of one firm relative to those of another, not the absolute level of price change. Thus, a relatively small price increase can potentially have a major influence on competitive position.

- Other International Market Factors: Many factors in addition to energy prices ultimately determine the competitive position in an industry. The total competitive picture will determine whether a firm is able to bear higher energy prices.

The study analyzes fourteen major industries in Ontario. They were selected primarily because of their sensitivity to international competition and relatively high energy use. For each industry, the combined direct and indirect effects of a one and two dollar price increase in crude oil is identified. (It is assumed that natural gas continues to be indexed at 85 per cent.) The impact on transportation industry charges is also documented. The study compares energy costs for equivalent U.S. industries. Finally, it examines the broader trading environment including tariff levels, exchange rates and trends in wage levels.

The major findings of the study are:

1. The direct and indirect effects of energy price increases will have a widely varying effect on the selling prices of the industries studied, ranging from 0.3 per cent (television and radio sets) to 3.6 per cent (industrial chemicals).

2. Overall, the impact of the price increases is most severe on the export sector, particularly industrial chemicals and pulp and paper mills.

3. Energy induced increases in transportation costs will result in an additional competitive burden for some industries. Most effected would be goods shipped by truck.

4. In most industries included in the sample, direct energy costs are more significant than those borne by American counterparts. This suggests that Ontario industry is harder hit by energy cost increases.

5. The competitive effects for exporters of oil and gas price increases are compounded by foreign tariffs.

6. The relatively high level of the Canadian dollar at this stage of the economic recovery implies an additional competitive disadvantage for Ontario firms.

7. Many of the industries in the study are less productive and have higher wage costs than their U.S. counterparts. This has further eroded their competitive position.

SELECTED INDUSTRIES

Fourteen industries, listed in Table 1, have been selected to form a basis for examining the impact of oil and gas price increases on the international competitiveness of Ontario industries. They were selected primarily on the basis of:

- their sensitivity to international competition;
- the significance of Ontario production to Canada;
- the significance of the industry in Ontario; and
- their intensity of direct energy use.

The fourteen industries produce 25 per cent of Ontario's manufacturing output and account for an estimated 180,000 Ontario jobs. They also provide about one-third of Canada's exports of manufactured goods. Exclusion of an industry, however, should not be taken as an indication of inconsequential competitive effects of oil-gas price changes. These fourteen industries are merely a representative sample.

Table 1 divides industries into exporting, import competing and domestic. Motor vehicle parts manufacturers, pulp and paper mills, agricultural implements and industrial chemicals emerge as major Ontario industries most subject to international competition in either domestic or foreign markets.

INDUSTRY STRUCTURAL CHARACTERISTICS — Table 1

Industry	Imports* % of Consumption	Exports* % of Output	Value Added** Ontario % of of Canada	Value Added** % of Total Ontario
Import Competing Industries				
Motor Vehicle Parts	74.5	59.9	97.3	6.7
Major Appliances	28.8	10.3	64.4	0.8
Radio & TV Receivers	31.9	14.4	91.6	0.8
Plastics & Synthetics	29.4	8.5	39.2	0.3
Glass & Glass Products	26.0	3.3	71.5	1.1
Steel Pipe & Tube	23.0	9.1	59.7	0.5
Export Oriented Industries				
Pulp and Paper	8.3	68.5	25.0	3.0
Iron and Steel	13.3	16.5	83.9	6.2
Mixed Fertilizers	53.7	91.0	37.9	0.1
Agricultural Implements	81.1	71.5	69.7	0.8
Industrial Chemicals	22.9	24.1	64.5	2.4
Distilleries	14.8	50.5	60.8	1.2
Domestic Industries				
Paint and Varnish	7.4	1.7	55.7	0.5
Cement	2.5	6.9	36.1	0.4

Source: *Ontario Treasury estimates for 1970
**Statistics Canada, Census of Manufacturers, 1972 and 1973 estimates.

INDUSTRY EFFECTS OF OIL-GAS PRICE INCREASES

Direct and Indirect Effects

This section indicates the direct and indirect price effects of an increase in oil and natural gas prices on a number of industry selling prices. The initial or direct effects of oil-gas price increases are often quite small. However, these cost effects will cumulate or compound throughout the economy. For example, oil-gas price increases result in higher steel prices, and steel price increases raise costs for motor vehicle parts manufacturers. These indirect effects substantially increase the total impact on the economy of oil-gas price changes.

The major assumptions used in this analysis are as follows:

- The technical structure of the Canadian economy in 1976 is represented by the 1966 input-output table for Canada.
- The price of an industry's output is determined by its operating costs and changes are passed on to consumer.
- The change in material prices and other costs does not lead to a substitution of inputs.
- Domestic prices reflect both domestic industry prices and the price of the imports.
- Profit margins are maintained in constant dollar terms.[1]

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1. Maintaining margins in constant dollars gives a smaller impact on industry selling prices than would maintaining profit margins in current dollars. However, the constant dollar assumption, since it implies a declining current dollar margin, is closer to the implications for profit margins of the Anti-Inflation Program than its current dollar alternative. Also, from a competitive point of view, the profit margin is the most flexible part of the cost structure, in the short run, with which to meet competition.

Table 2 shows the changes in industry selling prices that would result from an increase in domestic oil prices. Two cases have been assumed here: an increase from $8 per barrel to $9 per barrel and from $8 per barrel to $10 per barrel. Natural gas prices are assumed to be indexed at 85 per cent of commodity equivalent prices.

For a $2 per barrel increase in crude oil prices, with gas indexed, the change in industry selling prices in the sample of fourteen industries ranges from 3.6 per cent for industrial chemicals to 0.3 per cent for household radio and TV manufacturers. Table 2 reveals that the most significant price effects appear in the chemical related industries; these include plastics and resins, paint and varnish, mixed fertilizers and industrial chemicals manufacturers. Price effects are also above average in the production of cement, glass products and pulp and paper.

DIRECT AND INDIRECT EFFECTS ON INDUSTRY SELLING PRICES OF OIL-GAS PRICE INCREASES

Table 2

	Percentage Increase in the Industry Selling Price	
	From a $1.00/bbl Increase in Price of Oil	From a $2.00/bbl Increase in Price of Oil
Import Competing Industries		
Motor Vehicle Parts	0.3	0.6
Major Appliances	0.3	0.6
Radio and TV Receivers	0.1	0.3
Plastics and Synthetics	1.1	2.2
Glass and Glass Products	0.7	1.4
Steel Pipe and Tube	0.5	1.0
Export Oriented Industries		
Pulp and Paper	0.7	1.4
Iron and Steel	0.5	1.0
Mixed Fertilizers	0.8	1.6
Agricultural Implements	0.3	0.6
Industrial Chemicals	1.8	3.6
Distilleries	0.3	0.6
Domestic Industries		
Paint and Varnish	0.8	1.6
Cement	1.0	2.0

Source: Ontario Treasury estimates.

In general, the effects of oil-gas price increases are most heavily felt in the export industries. Looking at the broad categories of economic activity, exports show the largest price change resulting from an oil-gas price hike. Table 3 indicates that for a $2.00 increase in the price of crude oil, the Gross Domestic Product deflator increases by 1.4 per cent, while the export price index increases by 3.2 per cent. Similarly, the

large effects in non-metallic mineral products industries is reflected in the relatively large impact from oil-gas price increases in the construction price index. The GNE deflator for construction expenditures alone would rise by 1.0 per cent for a $2.00 per barrel increase in crude oil prices.

TOTAL DIRECT AND INDIRECT EFFECTS OF OIL-GAS PRICE INCREASES ON SELECTED PRICE INDICES — Table 3

	Percentage Increase in the Price Index	
	$1.00/bbl Increase in Price of Oil	$2.00/bbl Increase in Price of Oil
Construction Price Index	0.5	1.0
Export Price Index	1.6	3.2
Gross Domestic Product Price Index	0.7	1.4

Source: Ontario Treasury estimates.

Transportation Costs

Increases in industry selling prices do not include the additional impact of higher transportation costs on consumer prices. Table 4 shows the increases in transportation costs from oil-gas price increases for various transportation modes. These additional costs could be expected to compound particularly the competitive disadvantages of export goods. The table shows increased transport costs from the factory gate would be largest for goods shipped by truck and by air.

EFFECTS ON INDUSTRY SELLING PRICES IN THE TRANSPORTATION SECTOR OF OIL-GAS PRICE INCREASES — Table 4

Transport Mode	Percentage Increases in the Industry Selling Price: $1.00/bbl Increase in Price of Oil	$2.00/bbl Increase in Price of Oil
Air Transport	1.0	1.9
Water Transport	0.7	1.5
Railway Transport	0.7	1.3
Truck Transport	1.2	2.4

Source: Ontario Treasury estimates.

Wage Indexing

The above analysis has demonstrated the cumulative impacts of oil-gas price changes on industry selling prices. However, even these impacts, including as they do oil-induced increases in intermediate goods prices, cannot be regarded as the total price effects from oil-gas price changes. These results do not include, for example, the effects of increases in wage rates from oil-induced changes in the Consumer Price Index built into existing wage bargaining by COLA clauses. Depending on the extent of COLA arrangements, the more labour intensive industries will be most adversely affected in this manner.

COMPETITIVE IMPLICATIONS

Direct Energy Use

The importance of the industry price increases is not strictly dependent on the amount of the increase, but rather on the increase relative to that of competitors' prices. Strictly comparable data measuring price effects for foreign competitors are not available. It is possible, however, to compare certain relevant competitive factors for comparable classes of U.S. and Canadian industries. Table 5 shows the direct energy cost to the Ontario industries used in the study and to their U.S. counterparts.

DIRECT ENERGY EXPENDITURES RATIO
ONTARIO AND U.S. AVERAGE 1971-72
(Dollars per Thousand Dollars of Shipments)

Table 5

	Ontario	U.S.
Motor Vehicle Parts	10.8	9.7
Major Appliances	7.9	7.7
Radio and TV Receivers	3.2	2.9*
Plastics and Synthetics	25.4	29.0
Glass and Glass Products	40.6	40.2
Steel Pipe and Tube	14.8	14.4
Pulp and Paper	79.7	68.4
Iron and Steel	35.4	52.7
Mixed Fertilizers	9.9	9.9
Agricultural Implements	12.2	8.2
Industrial Chemicals	92.4	70.9**
Distilleries	NA	7.9
Paint and Varnish	8.1	6.7
Cement	163.2	157.1

Source: Statistics Canada Census of Manufacturers, 1971 and 1972; U.S. Bureau of Census, Annual Census of Manufacturers, 1971 and 1972.

*1971 only.
**1972 only.

Table 5 shows that direct energy costs as a percentage of shipments are generally higher in Ontario than for comparable U.S. industries. These costs are significantly higher in the industrial chemicals, cement, and pulp and paper industries. There are exceptions however: the direct energy cost in iron and steel mills, and plastics and synthetic resins manufacturers are lower in Ontario than the United States. Differences in energy costs emerge from a complex of factors reflecting product mix, technological and pricing differences between Ontario and the United States. What is important, however, is the significantly higher vulnerability of Ontario industries to energy price increases relative to U.S. competitors. These differences cumulate through the economy, and the impact on end-products competitiveness that results from oil-gas price increases could be quite substantial.

Foreign Tariffs

There is a further critical factor for the export industries. The existence of foreign tariffs shown for selected industries in Table 6, increases the competitive disadvantage for Canadian exporters from an oil-induced change in product prices. This is true even if the oil-gas cost change is the same abroad as it is in Canada. For example, for a commodity facing a tariff rate of 10 per cent, a $1 increase in the industry price would lead to a $1.10 increase in the selling price of the Canadian good abroad. Table 6 reveals that industrial chemicals exporting to the U.S. and the EEC may be particularly hard hit in this regard.

TARIFFS ON SELECTED EXPORT INDUSTRIES, AD VALOREM, U.S. AND E.E.C. 1970
(Per cent)

Table 6

	U.S.	E.E.C.
Pulp and Paper	4.46	5.92
Iron and Steel	3.30	2.90
Mixed Fertilizers	1.41	2.63
Agricultural Implements	4.02	5.71
Industrial Chemicals	6.76	6.14
Distilleries*	12.62	29.87

*Includes excise taxes.

Source: Ontario Treasury estimates.

INTERNATIONAL COMPETITIVE ENVIRONMENT

The competitive disadvantage to Canadian industry of a significant oil-gas price increase at this time is not simply to be determined from the isolated impact of oil and gas price changes on product prices. Rather the effects should be viewed in the context of world recession, in which Canada was out of phase with its major trading partners, and of the current recovery phase. When put in this context, further large oil and gas price increases would inhibit Canadian ability to participate in the world economic recovery now underway. This section outlines some of these additional factors which influence the competitive position of Canadian industry.

Exchange Rates

Canada's exchange rate will play an important role in determining the relative competitive position of manufacturing industries, both exporting and import competing. A higher valued Canadian dollar will result in a more difficult trading environment for both Ontario's manufactured exports in foreign markets and import competing products in domestic markets. Table 7 shows that for the first three-quarters of 1975 the Canadian dollar declined in relation to the U.S. dollar. At the time, many argued that it reflected, and offset, Canada's weakened competitive position due to a higher wage inflation than in the United States. Since the third quarter of 1975, however, the Canadian dollar has moved steadily to a premium.

CANADA-U.S. EXCHANGE RATE — Table 7

Year	U.S. $ per Canadian $
1974	1.022
1975	0.983
1st Quarter	1.001
2nd Quarter	0.979
3rd Quarter	0.970
4th Quarter	0.983
1976	
1st Quarter	1.006
April 12th	1.017

Source: Bank of Canada.

A number of factors led to the recent strengthening of the Canadian dollar. Among these are the following:

- Canadian monetary policy has led to a widening interest rate gap between Canada and the U.S. and a heavy capital inflow into Canada.
- Domestic capital markets may have been adversely affected on the supply side by a failure to effectively recycle domestic government petro-dollars into the long end of the market. As a result, borrowers have experienced additional encouragement to borrow abroad.
- Increased domestic oil prices have added to inflation and consequently they have helped hold up long-term interest rates in Canada. This has also encouraged foreign borrowing.

Productivity

Increasingly, attention has been focused on the relatively poor productivity performance of many Canadian industries compared to those in the U.S. and its implications for the future of our industrial development.[1] Table 8 shows the ratio of Canadian to U.S. productivity for 1972 in the sample of industries. The measure of productivity is value-added per man-hour and may be biased to the extent that the commodity output mix in an industry is different between the two countries. It does, nonetheless, give a rough indication of the existing relative productivity gap between the U.S. and Canadian industries. For almost all industries in the sample, productivity is lower in Canada.

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1. Honourable W. Darcy McKeough, Ontario Budget 1976 (Toronto: Ministry of Treasury, Economics and Intergovernmental Affairs, 1976).

COMPARATIVE U.S. AND CANADIAN PRODUCTIVITY AND WAGE COSTS, 1972* — Table 8

	Canada as a Per Cent of U.S.	
	Productivity	Wage Costs Per Dollar of Shipments
Import Competing		
Motor Vehicle Parts	82.8	84.8
Major Appliances	66.4	103.7
Radio and TV Receivers	109.4	92.5
Plastics and Synthetic	67.2	99.3
Glass	80.8	106.2
Glass Products	93.4	86.5
Steel Pipe and Tube	77.3	91.1
Export Oriented		
Pulp and Paper	74.3	116.7
Iron and Steel	84.1	111.6
Mixed Fertilizers	83.1	102.9
Agricultural Implements	61.8	117.1
Industrial Chemicals	N/A	N/A
Distilleries	127.7	124.5
Domestic		
Paint and Varnish	90.7	118.9
Cement	112.4	110.3

*Productivity is measured as value added per man-hour of production labour.

Source: Department of Industry, Trade and Commerce, Productivity Branch, unpublished working document, 1975.

Wage Competitiveness

Table 8 also shows payroll costs per dollar of sales in Canada relative to the United States. This ratio identifies those industries which are more labour intensive relative to their U.S. counterparts. The higher this ratio the greater their competitive

vulnerability to wage behaviour. The table indicates that in Canada labour costs per dollar of sales in the export oriented industries are consistently higher than in the comparable U.S. industries.

Table 9 shows that, in general terms, labour costs in Canadian manufacturing have been rising more rapidly than in the United States. Since 1971, Canadian unit labour costs in manufacturing have risen by 35 per cent compared to only 23 per cent in the U.S. and exchange rate movements have tended to exacerbate the problem. As already noted, a relative decline in the value of the Canadian dollar in early 1975 offset part of the deteriorating competitive position in wages. After mid-year, however, the exchange rate trend once again became adverse, and the advantages gained last year have been lost.

TRENDS IN UNIT WAGE COSTS IN MANUFACTURING, U.S. AND CANADA, 1970-1975 (1971=100)

Table 9

	Domestic Currency			Canadian Dollars	
	U.S.	Canada	Ratio of Canada to U.S.	U.S.	Ratio of Canada to U.S.
1971	100.0	100.0	100.0	100.0	100.0
1972	101.0	103.8	102.8	99.1	104.7
1973	101.6	108.4	106.7	100.6	107.8
1974	110.3	120.3	109.1	106.8	112.6
1975*	123.3	137.1	111.2	124.2	110.4

Source: Bank of Canada Review, 1976, U.S. Department of Labour, Bureau of Labour Statistics, Employment and Earnings, various issues.

*Preliminary.

ANTI-INFLATION PROGRAM

Increases in energy prices have a significant impact on the basic cost-of-living of Canadians. Over the past two years, Ontario Budgets have documented the impact of oil and gas price increases on the Consumer Price Index. Clearly, further oil and gas price increases at this time are inconsistent with the objectives of the federal Anti-Inflation Program.

For example, the Ontario Treasury estimated that in 1975 oil and gas price increases had a substantial effect on the economy.[1] A $1.50 increase in oil prices raised the Consumer Price Index for Canada by 2.3 per cent on a full year basis. The major impact on the CPI from the oil-gas price increase will come in the transportation, housing and food categories. It is estimated, for example, that a $2 per barrel increase in the oil price this year would generate an increase of 1.7 per cent in agricultural selling prices. Price effects of this magnitude at this time would erode the effectiveness of the AIP.

CONCLUSION

It has been demonstrated that the economic effects of oil-gas price changes must be placed in the context of the welter of economic changes currently taking place. Significant oil-gas price increases, at this time in the Canadian economic recovery, could prove damaging. Export markets, once lost, are not easily recaptured.

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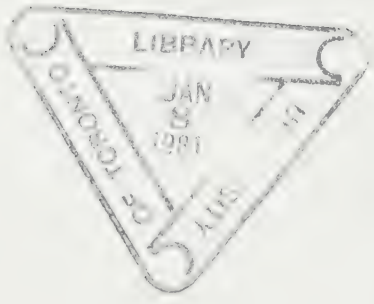
1. Honourable W. Darcy McKeough, "The Energy Factor and Ontario's Economic Recovery," Supplementary Actions to the 1975 Ontario Budget.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